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JPRS L/9522

3 February 1981

East Europe Report

SCIENTIFIC AFFAIRS

(FOUO 2/81)



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EAST EUROPE REPORT
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CONTENTS

CZECHOSLOVAKIA

1980 List of Chemical Fertilizers Available in CSSR Published (JuraJ Korim; AGROCHEMIA, Oct 80)	1
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- a - [III - EE - 65 FOUO]

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CZECHOSLOVAKIA

1980 LIST OF CHEMICAL FERTILIZERS AVAILABLE IN CSSR PUBLISHED

Bratislava AGROCHEMIA in Slovak No 10, Oct 80 supplement pp 1-20

[Supplement by Eng Juraj Korim, Research Institute of Agrochemical Technology, Bratislava: "Survey of the Assortment of Industrial Fertilizers in 1980"]

[Text] Introduction

This survey contains the basic technical and commercial information on industrial fertilizers supplied by the Agricultural Supply and Purchase (PZN) enterprises. The most common type of packaging and the market price in this packaging are given for sales to agricultural producers, including those provided from central supplies.

The nutrient content is given for an average batch, calculated as oxide in the case of phosphorus and potassium, with the proportions of the elements themselves given in parentheses. The minimum, i.e. required, contents of nutrients are given in accordance with existing standards, again in terms of oxides for phosphorus and potassium.

The bulk density is an average value for the substance when freshly, freely poured without shaking or settling.

In the table of market prices, wherever possible we chose the packaging so as to make it possible to compare interchangeable fertilizers or fertilizers of similar character without the influence of other factors. The prices of nutrients in multicomponent fertilizers were calculated by multiplying the proportion of each nutrient by its price in the basic single-component fertilizer (4.10 Kcs for N, 5.35 Kcs for P_2O_5 and 1.40 Kcs for K_2O). The results were compared with the market price of the fertilizer and the prices of the nutrients adjusted proportionately. For completeness, we also included in the table the price of ammonia water, even though this involves direct deliveries outside of the PZN enterprises, and the price of amoniakat [ammonium nitrate-ammonia solution] which is used in the production of multicomponent fertilizers.

We have not included special fertilizers containing trace nutrients, humus fertilizers, or peat or limestone materials supplied by PZN enterprises to agricultural producers and gardeners. In view of their special character we will publish a list of these, along with their retail prices, in future issues.

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In contrast to previous listings, the names of the fertilizer producers are added in the present version, in abbreviated form. They are: the national enterprises of VHJ Unichem Pardubice (Sintezia East Bohemian Chemical Plants, Pardubice-Semtin; Chemicke Savody [Chemical Plants], Sokolov), and of VHJ Slovchemia, Bratislava (Chemicke Zavody J. Dimitrova [J. Dimitrov Chemical Plants], Bratislava; Duslo Sala; Chemko Strazske; Povazske Chemicke Zavody (Povazske Chemical Plants) Zilina; Fosfa Postorna), and the plants of the Chemmetropol concern in Prague (Chemicke Zavody Ceskoslovensko-Sovetskeho Pratelstva [Czechoslovak-Soviet Friendship Chemical Plants] Zaluzi (Krusne Horg); Severoceske Chemicke Zavody [North Bohemian Chemical Plants] in Lovosice; Spolana Neratovice, Moravske Chemicke Zavody [Moravian Chemical Plants] Ostrava; and Prerovske Chemicke Zavody [Prerov Chemical Plants], Prerov).

[Note: The following abbreviations are used: CHZ [Chemical Plants]; MCHZ [Moravian Chemical Plants]; PCHZ [Povazske Chemical Plants]; SCHZ [North Bohemian Chemical Plants]; CHZ CSSP [Czechoslovak-Soviet Friendship Chemical Plants]; VCHZ [East Bohemian Chemical Plants]; PrCHZ [Prerov Chemical Plants]; CHZJD [Dimitrov Chemical Plants]]

Single-Component Nitrogen Fertilizers

Ammonium Sulfate--SA

Active ingredient:	Ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$
Nutrient content:	21 percent N
Packaging/price:	Bulk, 85.65 Kcs per 100 kg
Appearance:	Fine crystals, colorless or pinkish
CSN 65 2242 [Czechoslovak state standard]	Ammonia nitrogen, min. 20.5 percent (synthetic), min. 20.3 percent (from coking plant)
	Free H_2SO_4 , max 0.2 percent
	Moisture, max 1.0 percent (synthetic), max 1.5 percent (from coke plant)
	Passage through mesh: 0.25 mm, max 20 percent (synthetic) 0.2 mm, max 20 percent (from coke plant)
Other properties:	Physiologically acidic fertilizer--soil must be limed for repeated use. Gives off ammonia above 100°C . Bulk density about 0.9 tons/m^3
Producer	CHZ Sokolov, MCHZ Ostrava, Spolana Neratovice, PCHZ Zilina, metallurgical coking plants, gas refineries, import

Calcium Cyanamide--DV

Active ingredient:	Calcium cyanamide CaCN_2
Nutrient content:	Nitrogen 19.2 percent (nonoil-treated), 18 percent (oil-treated)
Packaging price:	75-kg paper bags, 209.90 Kcs per 100 kg

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Appearance: CSN 65 4904:	Fine black-brown powder, with carbide odor Nonoil-treated, min 19.8 percent nitrogen Oil-treated, min 18.0 percent nitrogen Residual calcium carbide, max 1.5 percent (nonoil-treated) and 2.0 percent Retained by screen with 0.5 mm openings, max 2 percent with 0.2 mm openings, max 20 percent with 0.09 mm openings, max 40 percent
Other properties:	DV is a physiologically alkaline fertilizer. It contains nitrogen in cyanide and amide form. Also has pesticidal effect. Bulk density 1.1 tons/m ³
Note:	Should be stored in dry, covered, well-ventilated areas, stacked a maximum of 4 high. When handling, health protection procedures must be strictly observed, and the upper respiratory passages, and sensitive parts of the skin and eyes must be protected from the powder. Alcoholic beverages may not be consumed.
Producer:	CHZ Sokolcv, import
 Calcium Nitrate--LV	
Active ingredient:	Calcium nitrate Ca(NO ₃) ₂ with water of crystallization
Nutrient content:	16.2 percent N
Packaging/price:	50-kg polyethylene bags, 83.90 Kcs per 100 kg
Appearance: CSN 65 4905:	White or grayish, partly irregular granular material Total N, min 15.0 percent Ammonia nitrogen, max 1.5 percent Percentage of particles smaller than 0.6 mm, max 5.0 percent larger than 5.0 mm, max 4.0 percent
Other properties:	LV is a physiologically alkaline fertilizer containing nitrogen in nitrate form. It is hygroscopic and deliquesces in air. Bulk density 1.0 tons/m ³
Producer:	MCHZ Ostrava, SCHZ Lovosice
 Ammonium Nitrate With Limestone--LAV 30 or 25	
Active ingredient:	Ammonium nitrate NH ₄ NO ₃ , with added limestone CaCO ₃
Nutrient content:	30.5 percent or 25.2 percent N, roughly half as ammonia and half as nitrate
Packaging/price:	50-kg polyethylene bags, 145.90 Kcs per 100 kg of LAV 30 and 120.90 Kcs per 100 kg of LAV 25
Appearance: CSN 65 4903 and 65 4906:	Grayish or brownish spherical granules. Total N, min 29.5 percent or 24.5 percent Moisture, max 1.5 percent Particles smaller than 0.6 mm, max 5.0 percent larger than 5 mm, max 2.0 percent Flowability, min 80 percent

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Other properties: The physiological reaction of LAV is neutral. It may be stored stacked a maximum of 10 bags high. It cakes easily and must be stored in dry, covered areas. Bulk density up to 1.0 tons/m³

Producer: MCHZ Ostrava, SCHZ Lovosice

Ammonium Nitrate With Dolomite--LAD 27.5

Active ingredient: Ammonium nitrate NH₄NO₃, with added dolomite MgCa(CO₃)₂

Nutrient content: 27.5 percent N, as ammonia and nitrate

Packaging/price: 50-kg polyethylene bags, 131.90 Kcs per 100 kg

Appearance: Gray, dark gray or dark red or black granules

PND 54-013-77

Total N, min 26.8 percent

Particles smaller than 1 mm, max 5 percent

1-4 mm, min 85 percent

larger than 10 mm, max 0.5 percent

Flowability, min 90 percent

Other properties: Physiologically neutral fertilizer.

Bulk density 0.95 tons/m³

Producer: Duslo Sala, import

Note: Contains anticaking additive.

Ammonium Nitrate--LA, Nitrate C33

Active ingredient: Ammonium nitrate NH₄NO₃

Nutrient content: 33.6 percent N, half as ammonia, half as nitrate

Packaging/price: 50-kg polyethylene bags, 160.90 Kcs per 100 kg.

Appearance: Scaly, irregular chunks, bright orange-brown

PND11-040-74

Total nitrogen, minimum 33 percent

Moisture, max 1.5 percent

Particles smaller than 0.6 mm, max 8.0 percent

greater than 5.0 mm, max 8.0 percent

greater than 10.0 mm, max 0.1 percent

Other properties: LA is physiologically neutral and cakes easily.

The bulk density is greater than 0.8 tons/m³

Note: Must be stored away from all organic materials: flammable, class 1.

Producer: Chemko Strazske, import

Urea: MO

Active ingredient: Urea CO(NH₂)₂ (carbamide (diamide of carbonic acid))

Nutrient content: 46 percent N in amide form

Packaging/price: 50-kg polyethylene bags, 217.90 Kcs per 100 kg

Appearance: Fine white granules, sometimes with yellow tint

CSN: 65 4908

Total nitrogen, min 46 percent in dry state

Biuret, max 1.0 percent

Particles between 0.5 and 2.5 mm, min 90 percent

Flowability, min 92 percent

Other properties: Physiologically neutral fertilizer. Bulk density 0.7 tons m³

Producer: Duslo Sala, CHZ CSSP Zaluzy, import

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Anhydrous Ammonia

Active ingredient: Preammonia in liquid form, NH_3
 Nutrient content: 82.35 percent N
 Packaging/price: Transported and stored in special pressure containers, 211.10 Kcs per 100 kg of product in railroad tank cars.
 Appearance: Colorless liquid; changes in air to irritating gas with penetrating odor
 CSN: 65 1311: NH_3 content, min 99.0 percent, material quality B
 Other properties: Does not corrode steel, attacks copper and its alloys. Must be introduced 10-15 cm below ground surface. When handling, special safety procedures must be followed. Average density about 0.6 tons/ m^3 , depending on pressure and temperature, but tank must not be completely filled. Physiologically alkaline fertilizer.
 Producer: CHZ CSSP Zaluži, MCHZ Ostrava, Duslo Sala, Chemko Strazske

DAM 390

Active ingredient: Ammonium nitrate NH_4NO_3 and urea $\text{CO}(\text{NH}_2)_2$ in water solution
 Nutrient content: 30 percent N, half in amide form, quarter as ammonia, quarter as nitrate
 Packaging/price: In railroad tank cars, 158.65 Kcs per 100 kg; in purchaser's tank trucks, 153.65 Kcs per 100 kg
 Appearance: Transparent colorless liquid with mild ammonia odor
 PND 54-014-78: Nitrogen content, min 29.5 percent by weight pH, 6.0-7.5
 Other properties: Free ammonia, max 0.1 percent
 Physiologically neutral fertilizer. Does not develop pressure during storage. Average density 1.3 tons/ m^3 with content of 390 kg of nitrogen.
 Corrodes steel only slightly, attacks copper and its alloys. Plastic, rubber and wood are resistant. Solidifies at -10°C without damage to containers and tubing, liquefies again when temperature is raised.
 Producer: Duslo Sala, Chemko Strazske, SCHZ Lovosice, VCHZ Synthesia Pardubice-Semtin, MCHZ Ostrava

Ammonia Water

Active ingredient: Solution of ammonia in water NH_4OH
 Nutrient content: 25 percent NH_3 , i.e. 20.5 percent N
 Packaging/price: Transported and stored in steel or aluminum containers with a specified NH_3 vapor pressure, 67.50 Kcs per 100 kg in railroad tank car.
 Appearance: Colorless liquid with strong ammonia smell
 PND 33-466-68: NH_3 content, min 24 percent by weight, lower content requires purchaser's agreement

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Other properties: Physiologically alkaline fertilizer. When introduced into the soil below the surface, may be used full strength; when fertilizing grass cover at the surface, concentration of NH_3 must be decreased to 1 percent.

Note: Not produced as main product; it is an industrial byproduct and is used only in the vicinity of the source.

Amoniakat

Active ingredient: Ammonium nitrate NH_4NO_3 and ammonia water NH_4OH
 Nutrient content: 38.5 percent N in summer, 40.6 N in winter
 Packaging/price: In railway tank cars, 153.35 Kcs per 100 kg.
 Appearance: Colorless transparent liquid with strong smell of ammonia, develops a certain excess pressure above the surface.

Note: Shipped in accordance with PND 54-101-72 to foreign and domestic fertilizer producers for further processing, because when used directly for fertilizing it requires pressure vessels for transport and storage and special machines for application below the ground surface.

Producer: Duslo Sala

Single-Component Phosphate Fertilizers

Powdered Superphosphate--SF pr.

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate)
 Nutrient content: 16.5 percent P_2O_5 (7.3 percent P), Afrika type; 19.5 percent P_2O_5 (8.6 percent P), Kola type
 Packaging/price: Bulk, 69.50 Kcs per 100 kg (Afrika); 89.70 Kcs per 100 kg (Kola)
 Appearance: Gray or brownish powder with acrid odor
 CSN 55 4910 Water-soluble P_2O_5 , min 15 percent (Afrika), min 18 percent (kola)
 Free P_2O_5 , max 5.0 percent Afrika, max 6.0 percent Kola
 Moisture, max 13.5 percent Afrika, max 12.5 percent Kola

Other properties: Simple superphosphate is a physiologically acidic fertilizer. Bulk density up to 1.1 tons/ m^3

Note: The type (Afrika or Kola) depends on the source of the phosphate used in its production

Producers: PrCHZ Prerov, SCHZ Lovosice

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Granular Superphosphate--SF gr

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate), with small percentage of ammonia nitrogen

Nutrient content: 18 percent P_2O_5 (Afrika), 19.5 percent P_2O_5 (Kola), 2-4 percent N (8 percent P (Afrika), 8.6 percent P (Kola))

Packaging/price: Bulk, 88.10 Kcs (Afrika), 104.20 Kcs (Kola) per 100 kg

Appearance: Whitish, grayish or brownish granules, sharp smell
CSN 65 4910 P_2O_5 soluble in 2 percent citric acid, min 17 percent (Afrika), min 19.0 percent (Kola)
Free P_2O_5 , max 2.5 percent
Particles between 1 and 4 mm, min 90 percent
under 1 mm, max 3.0 percent
over 4 mm, max 7 percent
over 10 mm, max 0.5 percent

Other properties: Mechanical strength of granules min 97 percent
Physiologically acidic fertilizer.
Density about 0.9 tons/m³

Note: The type may be Afrika or Kola depending on the phosphate used for production.

Producer: PrCHZ Prerov, SCHZ Lovosice

Fine Granular Superphosphate--SFkr

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate), and small percentage of ammonia nitrogen

Nutrient content: 18 percent P_2O_5 , 2-4 percent N, (8 percent P) Afrika; 19.5 percent P_2O_5 , 2-4 percent N (8.6 percent P) Kola

Packaging price: Bulk, 88.10 Kcs per 100 Kg Afrika, 104.20 Kcs per 100 kg Kola

Appearance: Fine grayish or brownish granules, sharp smell
PND 27-033-76a P_2O_5 soluble in citric acid, min 17 percent (Afrika),
and 58-600-76 min 19 percent (Kola); Free P_2O_5 , max 2.5 percent
Particles smaller than 2 mm, min 90 percent
between 2 and 5 mm, max 10 percent

Other properties: Physiologically acidic fertilizer.
Bulk density about 0.9 tons/m³

Producer: PrCHZ Prerov, SCHZ Lovosice

Semidecomposed Superphosphate--REFOS

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate), and ground phosphate

Nutrient content: 19 percent P_2O_5 (8.4 percent P)

Packaging/price: Bulk, 76.80 Kcs per 100 kg

Appearance: Fine gray or brownish material, sharp odor.
SCN 65 4910: Total P_2O_5 , min 17.8 percent
Water soluble, min 11.5 percent
Free P_2O_5 , max 4.0 percent
Moisture, max 15 percent

Other properties: Physiologically acidic fertilizer

Producer: VCHZ Synthesia Pardubice-Semtin, in Kolin plant.

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Ground Phosphate and Hyperphosphate

Active ingredient: Tricalcium phosphate $\text{Ca}_3(\text{PO}_4)_2$ and its mineralogical forms distinguishable by place of occurrence

Nutrient content: 29 percent P_2O_5 (12.8 percent P)

Packaging/price: 50-kg paper bags, 100.10 Kcs per 100 kg.
Granulated hyperphosphate 99.50 Kcs per 100 kg.

Appearance: Fine gray or grayish-brown powder without odor, very flowable and powdery

TPD 9-048-61 or foreign supplier's specifications: Total P_2O_5 , min 28.0 percent
Hyperphosphate, min 60 percent of P_2O_5 soluble in 2 percent citric acid
Moisture, max 5.0 percent
Retained on screen
0.2mm, max 20 percent
0.5mm, max 2.0 percent
1.0mm, max 0.5 percent

Other properties: Physiologically neutral fertilizer

Bulk density: 1.2 tons/m³

Producer: Ground phosphate produced by CHZJD Bratislava, hyperphosphates are imported, primarily in granular form.

Enriched Superphosphate--SFO

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate)

Nutrient content: 25 percent P_2O_5 (11.0 percent P)

Packaging/price: Bulk, 127.20 Kcs per 100 kg

Appearance: Loose gray powder with characteristic odor

CSN 65 4911: Water-soluble P_2O_5 , min 24.5 percent
Free P_2O_5 , max 6 percent
Moisture, max 12 percent

Other properties: Physiologically mildly acidic fertilizer

Producer: Was temporarily produced by CHZJD Bratislava, now imported

Triple Superphosphate---SFT

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate)

Nutrient content: 44 percent P_2O_5 (19.3 percent P)

Packaging/price: Bulk, 235.30 Kcs per 100 kg

Appearance: Gray powder with characteristic odor

PND 9-207-76: P_2O_5 soluble in 2 percent citric acid, min 44 percent
Water-soluble P_2O_5 , min 37.5 percent
Free P_2O_5 , max 6 percent
Particles larger than 5 mm, max 5 percent
Moisture, max 12 percent

Other properties: Physiologically weakly acidic fertilizer.
Bulk density over 0.9 tons/m³

Producer: CHZJD Bratislava

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Granulated Triple Superphosphate

Active ingredient: Calcium dihydrogen phosphate $\text{Ca}(\text{H}_2\text{PO}_4)_2$ (monocalcium phosphate)
 Nutrient content: 45-49 percent P_2O_5 (19.8-21.5 percent P)
 Packaging/price: 50 kg paper bags, 240.30-264.70 Kcs per 100 kg
 Appearance: Gray irregular granules
 Foreign supplier's specifications: Acceptable P_2O_5 , min 45.0 percent to min 49 percent
 Water-soluble P_2O_5 , min 85 percent of acceptable P_2O_5
 Particles larger than 4 mm, max 5 percent
 2-4 mm, min 50 percent
 1-2 mm, min 40 percent
 under 1 mm, max 5.0 percent
 Other properties: Physiologically weakly acidic
 Producer: Import

Single-Component Potassium Fertilizers

Potassium Salt 40 Percent--DS 40

Active ingredient: Potassium chloride KCl
 Nutrient content: 40 percent K_2O (33.2 percent K)
 Packaging/price: Bulk, 59.30 Kcs per 100 kg
 Appearance: Fine white, gray or pinkish crystalline salt.
 CSN 65 4920: K_2O , min 38.0 percent
 Moisture, max 1.0 percent
 Retained on 5 mm screen, 0 percent
 on 3 mm screen, max 5 percent
 Other properties: Physiologically acidic fertilizer.
 Bulk density over 1.0 tons/m³
 Producer: Import

Potassium Salt 50 Percent--DS 50

Active ingredient: Potassium chloride KCl
 Nutrient content: 50 percent K_2O (41.5 percent K)
 Packaging/price: Bulk, 70.10 Kcs per 100 kg
 Appearance: Fine white, gray or pinkish crystalline salt
 CSN 65 4920: K_2O , min 48.0 percent
 Moisture, max 1.0 percent
 Retained by 5 mm screen, 0 percent
 by 3 mm screen, max 5.0 percent
 Other properties: Physiologically acidic fertilizer. Bulk density over 1.0 tons/m³
 Sometimes also supplied in granular form
 Producer: Import

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Potassium Salt 60 Percent--DS 60

Active ingredient: Potassium chloride KCl
 Nutrient content: 60 percent K₂O (49.8 percent K)
 Packaging/price: Bulk. 78.50 Kcs per 100 kg
 Appearance: Fine whitish crystalline salt
 SCN 65 4920: K₂O, min 58 percent
 Moisture, max 0.5 percent
 Retained by 5 mm screen, 0 percent
 by 3 mm screen, max 5.0 percent
 Other properties: Physiologically acidic fertilizer
 Note: When product is supplied with guaranteed minimum
 K₂O content of 56 percent, price is 56.50 Kcs per
 100 kg.
 Producer: Import

Potassium Salt Granulated 60 Percent--DS 60 gr

Active ingredient: Potassium chloride KCl
 Nutrient content: 60 percent K₂O (49.8 percent K)
 Packaging/price: Bulk, 83.30 Kcs per 100 kg
 Appearance: Irregular whitish granules
 CSN 65 4920: K₂O, min 58 percent
 Moisture, max 0.5 percent
 Retained by 4 mm, screen, max 4.0 percent
 Particles smaller than 0.5 mm, max 10.0 percent
 Other properties: Physiologically acidic fertilizer
 Producer: Import

Potassium Sulfate--SD

Active ingredient: Potassium sulfate K₂SO₄
 Nutrient content: 50 percent K₂O (41.5 percent K)
 Packaging/price: Bulk, 100.50 Kcs per 100 kg
 Appearance: White or grayish powder
 CSN 65 4920: K₂O, min 48.0 percent
 Moisture, max 1.0 percent
 Other properties: Physiologically acidic fertilizer.
 Bulk density 1.3 tons/m³
 Note: Applied to chlorine-sensitive crops
 Producer: Import

Magnesium and Magnesium-Potassium Fertilizers

Kieserit Concentrate

Active ingredient: Magnesium sulfate MgSO₄ with water of crystalliza-
 tion, potassium chloride KCl
 Nutrient content: 18 percent MgO (11 percent Mg)
 Packaging/price: Bulk, 37.70 Kcs per 100 kg

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Appearance: Whitish crystals
 Technical specifications: According to foreign supplier
 Other properties: Physiologically acidic fertilizer
 Note: Contains 45-55 percent $MgSO_4$, applied only to fields with magnesium deficiency.
 Also contains at least 10 percent K_2O (8 percent K)
 Producer: Import

Kamex

Active ingredient: Potassium chloride KCl and magnesium sulfate $MgSO_4$
 Nutrient content: 40 percent K_2O and 4 percent MgO (33.2 percent K, 2.4 percent Mg)
 Packaging/price: Bulk, 63.70 Kcs per 100 kg
 Appearance: White to grayish crystals
 CSN 65 4920: K_2O , min 38.0 percent
 Moisture, max 1.0 percent
 Retained by 5 mm screen, 0 percent
 Grains 3-5 mm, max 5.0 percent
 Other properties: Physiologically acidic fertilizer
 Producer: Import

Magnesium Kainit--Mg Kainit

Active ingredient: Mixture of salts, primarily potassium chloride KCl and magnesium sulfate $MgSO_4$
 Nutrient content: 14 percent K_2O and 6 percent MgO (11.6 percent K, 3.6 percent Mg)
 Packaging/price: Bulk, 31.70 Kcs per 100 kg
 Appearance: Mixture of white, gray, reddish-brown to brown crystals
 CSN 65 4920: K_2O , min 13.0 percent
 Moisture, max 1.5 percent
 Other properties: Physiologically acidic fertilizer
 Bulk density 1.15 tons/ m^3
 Producer: Import

Granular Multicomponent Fertilizers

NPK 1

Active ingredient: Ammonium, potassium and calcium salts of nitric, phosphoric and hydrochloric acids with more than half of P_2O_5 water-soluble
 Nutrient content: 12.5 percent N, 19 percent P_2O_5 , 19 percent K_2O (8.4 percent P, 15.8 percent K)
 Packaging/price: 50-kg polyethylene bags, 206.20 Kcs per 100 kg
 Appearance: Gray granules
 PND 23-032-69: Total N, min 12.0 percent, total P_2O_5 19±1 percent, P_2O_5 soluble in citric acid, min 17 percent, water-soluble P_2O_5 , min 8.0 percent, total K_2O , 19±1 percent

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Moisture, max 1.5 percent
Granules from 1 to 5 mm, min 90 percent
Particles smaller than 1 mm, max 3 percent
larger than 10 mm, max 0.5 percent
larger than 5 mm, max 7.0 percent

Other properties: Nitrogen percent about 60 percent as ammonia,
40 percent as nitrate.
Physiological reaction mildly acidic.
Bulk density over 0.9 tons/m³

Producer: SCHZ Lovisice

NPK 2A Demetra, Synferta Z

Active ingredient: Ammonium, potassium and calcium salts of nitric,
phosphoric, sulfuric and hydrochloric acids with
low percentage of water-soluble P₂O₅

Nutrient content: 11.2 percent N, 11.2 percent P₂O₅, 15.2 percent K₂O
(4.8 percent P, 12.5 percent K)

Packaging/price: 50-kg polyethylene bags, 152.80 Kcs per 100 kg

Appearance: Grayish granules

PND 11-043-75: Total N, min 10.7 percent
P₂O₅ soluble in citric acid, min 10.6 percent
K₂O, min 13.8 percent
Total nutrients, min 36.6 percent
Granules 1-5 mm, min 85 percent
Particles larger than 5 mm, max 12 percent
smaller than 1 mm, max 3 percent
Flowability, min 80 percent
Mechanical strength of granules, min 97 percent

Other properties: About 53 percent of N as ammonia, remainder as
nitrate. Physiological reaction mildly acidic.
Bulk density over 1.0 tons/m³

Producer: Demetra by Chemko Strazske. Demetra RF, with
increased P₂O₅ from addition of amofos [ammonium
phosphate], also sometimes produced by Chemko.
Synferta Z produced by VCHZ Synthesia Semtin-
Pardubice according to PND 39-102-74 with 11.3
percent N, 11.3 percent P₂O₅ and 14.7 percent K₂O

NPK-NF

Active ingredient: Ammonium, potassium and calcium salts of nitric,
phosphoric and hydrochloric acids with half of P₂O₅
water-soluble

Nutrient content: 16 percent N, 16 percent P₂O₅, 16 percent K₂O
(7 percent P, 13.3 percent K)

Packaging/price: 50 kg polyethylene bags, 198.90 Kcs per 100 kg

Appearance: Whitish gray granules

CSN 65 4925: N. min 15.3 percent
P₂O₅soluble in citric acid, min 15.0 percent,
water soluble P₂O₅, min 8.0 percent

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	K ₂ O, min 15.0 percent
	Total nutrients, min 48.0 percent
	Particles smaller than 1 mm, max 3 percent
	larger than 10 mm, max 0.5 percent
	Granules 1-4 mm, min 90 percent
	Flowability, min 90 percent
Other properties:	Up to 58 percent of nitrogen as ammonia, remainder as nitrate. Physiological reaction mildly acidic.
	Bulk density 1.0 tons/m ³
Producer:	Duslo Sala
GVH III-5	
Active ingredient:	Ammonium, potassium and calcium salts of nitric, phosphoric, hydrochloric and sulfuric acids with high percentage of P ₂ O ₅ in water-soluble form.
Nutrient content:	8.5 percent N, 17.5 percent P ₂ O ₅ , 17.5 percent K ₂ O (7.7 percent P, 14.5 percent K)
Packaging/price:	Bulk, 205.40 Kcs per 100 kg
Appearance:	Light gray to light brown granules
PND 9-226-78:	N, min 8.5 percent
	P ₂ O ₅ soluble in citric acid, min 17.5 percent
	Water-soluble P ₂ O ₅ , min 14 percent
	K ₂ O, min 17.5 percent
	Total nutrients, min 44 percent
	Particles smaller than 1 mm, max 3 percent
	Granules 2-4 mm, min 80 percent
	Retained on 10 mm screen, max 0.5 percent
Other properties:	Three-fourths of nitrogen as ammonia, remainder as nitrate. Physiological reaction neutral, sometimes mildly acidic. Bulk density over 1.0 ton/m ³
Producer:	CHZJD Bratislava
Granular Amofos	
Active ingredient:	Ammonium salt of phosphoric acid with high percentage of water-soluble P ₂ O ₅
Nutrient content:	11.5 percent N, 49 percent P ₂ O ₅ (21.5 percent P)
Packaging/price:	50 kg paper bags, 358.50 Kcs per 100 kg
Appearance:	Dark gray granules
Foreign supplier's specifications:	Water-soluble P ₂ O ₅ , min 38 percent
	N, min 11 percent
	Particles smaller than 1 mm, max 5 percent
	Granules 1-4 mm, min 90 percent
	Moisture, max 1 percent
Other properties:	Physiologically neutral fertilizer
Producer:	Imported, sometimes as powder

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Granular Rekafos

Active ingredient: Sodium and calcium phosphosilicates, $5\text{Na}_2\text{O} \cdot \text{P}_2\text{O}_5 \cdot \text{SiO}_2$ and $5\text{CaO} \cdot \text{P}_2\text{O}_5 \cdot \text{SiO}_2$, and potassium chloride KCl
Nutrient content: 18 percent P_2O_5 , 20 percent K_2O (7.9 percent P, 16.7 percent K)
Packaging/price: 50 kg polyethylene bags, 159.20 Kcs per 100 kg
Appearance: Gray-brown granules
Technical specifications: According to foreign supplier
Other properties: Rekafos is physiologically alkaline.
The P_2O_5 is soluble in 2 percent citric acid.
Producer: Import

Liquid Multicomponent Fertilizers

NP Fertilizer 8-24-0

Active ingredient: Ammonium hydrogen and dihydrogen phosphate $(\text{NH}_4)_2\text{HPO}_4$ and $\text{NH}_4\text{H}_2\text{PO}_4$
Nutrient content: 8 percent N, 24 percent P_2O_5 (10.5 percent P)
Packaging/price: Transported and stored in plastic or steel vessels.
Price 202.90 Kcs per 100 kg in railway tank cars, 186.70 per 100 kg in purchaser's tank truck
Appearance: Colorless or greenish to brownish liquid with slight turbidity
PND 9-261-78: N, min 7.3 percent by weight
 P_2O_5 , min 23 percent by weight
pH, 6.0-7.0
Other properties: Solidifies below -8°C , melts as temperature rises above freezing point. Average density 1.285 tons per m^3 . Physiological reaction neutral. Color depends on source of phosphoric acid used in production.
Producer: CHZJD Bratislava under the names of Fostim, and Fosfa Postorna

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Sales Prices of Nutrients in Fertilizers

Sales Prices of Nutrients in Fertilizers									
Nizov hnojiv _a	Balení _b	Cena za		Obsah živiny v %			Cena Kč za		
		1 t	c	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
f	1	856,50	21	—	—	—	4,08	—	—
e	2	2099,—	19,2	—	—	—	10,93	—	—
g	3	839,—	16,2	—	—	—	5,17	—	—
h	4	1209,—	25,2	—	—	—	4,80	—	—
i	5	1459,—	30,5	—	—	—	4,78	—	—
j	6	1319,—	27,5	—	—	—	4,80	—	—
k	7	1609,—	33,6	—	—	—	4,79	—	—
l	8	2179,—	46	—	—	—	4,74	—	—
m	9	2111,—	82,3	—	—	—	2,56	—	—
n	10	675,—	20,5	—	—	—	3,29	—	—
o	11	1586,50	30	—	—	—	5,29	—	—
p	12	1533,50	39	—	—	—	3,93	—	—
q	13	695,—	—	16,5	—	—	—	4,21	—
r	14	897,—	—	19,5	—	—	—	4,60	—
s	15	881,—	—	18	—	—	—	4,89	—
t	16	1042,—	—	19,5	—	—	—	5,34	—
u	17	768,—	—	19	—	—	—	4,04	—
v	18	1001,—	—	29,3	—	—	—	3,42	—
w	19	995,—	—	29	—	—	—	3,43	—
x	20	1272,—	—	25	—	—	—	5,09	—
y	21	2353,—	—	44	—	—	—	5,35	—
z	22	2403,—	—	45	—	—	—	5,34	—
aa	23	593,—	—	—	40	—	—	1,48	—
ab	24	701,—	—	—	50	—	—	1,40	—
ac	25	785,—	—	—	60	—	—	1,31	—
ad	26	833,—	—	—	60	—	—	1,39	—
ae	27	1005,—	—	—	50	—	—	2,01	—
af	28	637,—	—	—	—	—	—	1,46	—
ag	29	317,—	—	—	—	—	—	1,71	—
ah	30	2021,—	12,5	19	19	4,62	6,03	1,58	—
ai	31	1486,—	11,2	11,2	15,2	4,79	6,25	1,64	—
aj	32	1948,—	16	16	16	4,60	6	1,57	—
ak	33	2013,—	8,5	17,5	17,5	5,40	7,04	1,84	—
al	34	1592,—	—	18	20	—	6,90	1,81	—
am	35	3196,—	11,5	49	—	—	4,24	5,53	—
an	36	2029,—	8	24	—	—	5,16	6,73	—

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